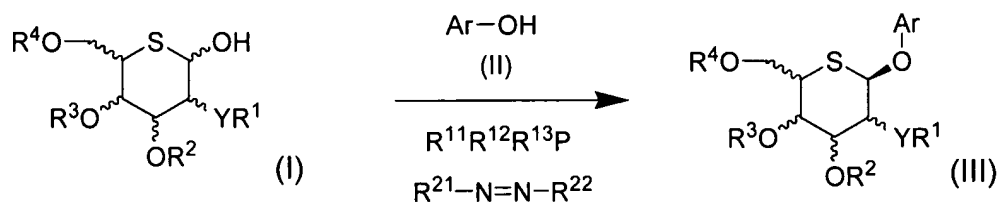


AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): A method for preparing an aryl 5-thio- β -D-aldohexopyranoside derivative of Formula (III), which comprises reacting a 5-thio-D-aldohexopyranose derivative of Formula (I) with Ar-OH of Formula (II) in the presence of a phosphine represented by $\text{PR}^{11}\text{R}^{12}\text{R}^{13}$ and an azo reagent represented by $\text{R}^{21}\text{-N=N-R}^{22}$ in accordance with the following scheme:



wherein

in the above Formulae (I) and (III),

the wavy lines mean containing any stereoisomer selected from D-form, L-form and a mixture thereof,

Y represents -O- or -NH-, and

R^1 , R^2 , R^3 and R^4 , which may be the same or different, each represent a hydrogen atom, a C_{2-10} acyl group, a C_{1-6} alkyl group, a C_{7-10} aralkyl group, a C_{1-6} alkoxy- C_{7-10} aralkyl group, an

allyl group, a tri(C₁₋₆ alkyl)silyl group, a C₁₋₆ alkoxy-C₁₋₆ alkyl group or a C₂₋₆ alkoxy-carbonyl group, or

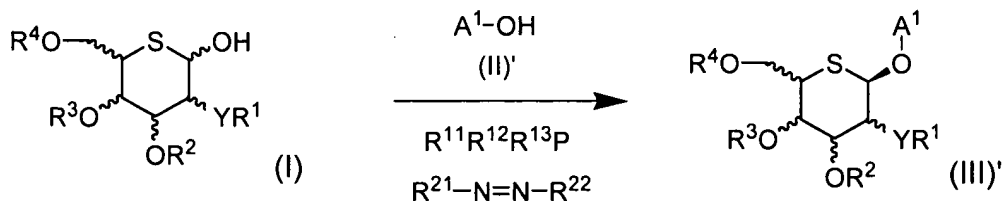
when Y represents -O-, R¹ and R², R² and R³, or R³ and R⁴ may together form -C(R^A)(R^B)- wherein R^A and R^B, which may be the same or different, each represent a hydrogen atom, a C₁₋₆ alkyl group or a phenyl group,
in the above Formula (II),

Ar represents an aryl group which may be substituted with any substituent,
in PR¹¹R¹²R¹³,

R¹¹ to R¹³, which may be the same or different, each represent a phenyl group which may be substituted with a C₁₋₆ alkyl group, a pyridyl group or a C₁₋₆ alkyl group, and
in R²¹-N=N-R²²,

R²¹ and R²², which may be the same or different, each represent a C₂₋₅ alkoxy-carbonyl group, an N,N-di-C₁₋₄ alkylaminocarbonyl group or a piperidinocarbonyl group.

2. (original): The method according to claim 1, wherein



Formula (II) is represented by the above Formula (II)' and Formula (III) is represented by the above Formula (III)' wherein Y, R¹, R², R³ and R⁴ are as defined in claim 1, wherein in the above Formulae (II)' and (III)',

A¹ represents an aryl group which may be substituted with the same or different 1 to 4 substituents selected from the group consisting of:

a halogen atom;

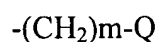
a hydroxyl group;

-⁺NH₃;

-⁺N(CH₃)₃;

a C₁₋₆ alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom and a hydroxyl group;

a group represented by the formula:



wherein m represents an integer of 0 to 4, and Q represents a formyl group, an amino group, a nitro group, a cyano group, a carboxyl group, a sulfonic acid group, a C₁₋₆ alkoxy group which may be substituted with 1 to 4 halogen atoms, a C₁₋₆ alkoxy-C₁₋₆ alkoxy group, a C₂₋₁₀ acyloxy group, a C₂₋₁₀ acyl group, a C₂₋₆ alkoxycarbonyl group, a C₁₋₆ alkylthio group, a C₁₋₆ alkylsulfinyl group, a C₁₋₆ alkylsulfonyl group, -NHC(=O)H, a C₂₋₁₀ acylamino group, a C₁₋₆ alkylsulfonylamino group, a C₁₋₆ alkylamino group, an N,N-di(C₁₋₆ alkyl)amino group, a carbamoyl group, an N-(C₁₋₆ alkyl)aminocarbonyl group, or an N,N-di(C₁₋₆ alkyl)aminocarbonyl group;

a C₃₋₇ cycloalkyl group, a C₃₋₇ cycloalkyloxy group, an aryl group, a C₇₋₁₀ aralkyl group, an aryloxy group, a C₇₋₁₀ aralkyloxy group, a C₇₋₁₀ aralkylamino group, a heteroaryl group, or a 4- to 6-membered heterocycloalkyl group, provided that each of these groups may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom, a hydroxyl group, a C₁₋₆ alkyl group and a C₁₋₆ alkoxy group; and

a group represented by the formula:



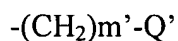
wherein X represents -(CH₂)_n-, -CO(CH₂)_n-, -CH(OH)(CH₂)_n-, -O-(CH₂)_n-, -CONH(CH₂)_n-, -NHCO(CH₂)_n- wherein n represents an integer of 0 to 3, -COCH=CH-, -S- or -NH-, and A² represents an aryl group, a heteroaryl group or a 4- to 6-membered heterocycloalkyl group, each of which may be substituted with the same or different 1 to 4 substituents selected from:

a halogen atom;

a hydroxyl group;

a C₁₋₆ alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom and a hydroxyl group;

a group represented by the formula:

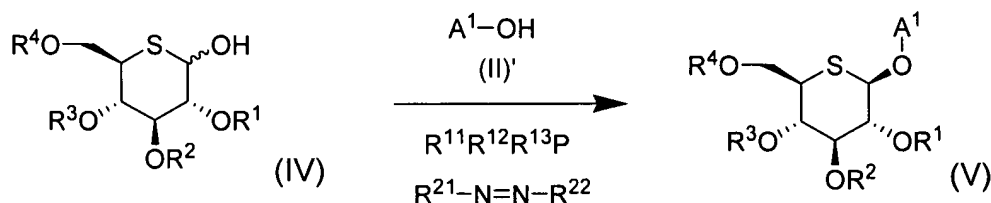


wherein m' represents an integer of 0 to 4, and Q' represents a formyl group, an amino group, a nitro group, a cyano group, a carboxyl group, a sulfonic acid group, a C₁₋₆ alkoxy group which may be substituted with 1 to 4 halogen atoms, a C₁₋₆ alkoxy-C₁₋₆ alkoxy group, a C₂₋₁₀ acyloxy group, a C₂₋₁₀ acyl group, a C₂₋₆ alkoxycarbonyl group, a C₁₋₆ alkylthio group, a C₁₋₆ alkylsulfinyl

group, a C₁₋₆ alkylsulfonyl group, -NHC(=O)H, a C₂₋₁₀ acylamino group, a C₁₋₆ alkylsulfonylamino group, a C₁₋₆ alkylamino group, an N,N-di(C₁₋₆ alkyl)amino group, a carbamoyl group, an N-(C₁₋₆ alkyl)aminocarbonyl group, or an N,N-di(C₁₋₆ alkyl)aminocarbonyl group; and

a C₃₋₇ cycloalkyl group, a C₃₋₇ cycloalkyloxy group, an aryl group, a C₇₋₁₀ aralkyl group, an aryloxy group, a C₇₋₁₀ aralkyloxy group, a C₇₋₁₀ aralkylamino group, a heteroaryl group, or a 4- to 6-membered heterocycloalkyl group, provided that each of these groups may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom, a hydroxyl group, a C₁₋₆ alkyl group and a C₁₋₆ alkoxy group.

3. (original): The method according to claim 2, wherein



Formula (I) is represented by the above Formula (IV) wherein R¹, R², R³ and R⁴ are as defined in claim 1 and Formula (III)' is represented by the above Formula (V) wherein R¹, R², R³ and R⁴ are as defined in claim 1, and A¹ is as defined in claim 2.

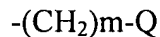
4. (original): The method according to claim 3, wherein A¹ represents a phenyl group substituted with -X-A² wherein X and A² are as defined in claim 2, in which the phenyl group may be further substituted with the same or different 1 to 3 substituents selected from:

a halogen atom;

a hydroxyl group;

a C₁₋₆ alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom and a hydroxyl group;

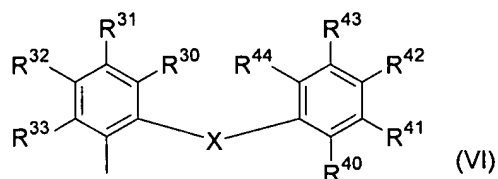
a group represented by the formula:



wherein m and Q are as defined in claim 2; and

a C₃₋₇ cycloalkyl group, a C₃₋₇ cycloalkyloxy group, an aryl group, a C₇₋₁₀ aralkyl group, an aryloxy group, a C₇₋₁₀ aralkyloxy group, a heteroaryl group, or a 4- to 6-membered heterocycloalkyl group, provided that each of these groups may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom, a hydroxyl group, a C₁₋₆ alkyl group and a C₁₋₆ alkoxy group.

5. (original): The method according to claim 3, wherein A¹ is represented by the following formula:



wherein

X represents $-(CH_2)_n-$, $-CO(CH_2)_n-$, $-CH(OH)(CH_2)_n-$, $-O-(CH_2)_n-$, $-CONH(CH_2)_n-$, $-NHCO(CH_2)_n-$ wherein n represents an integer of 0 to 3, $-COCH=CH-$, $-S-$ or $-NH-$,

R^{30} , R^{31} , R^{32} and R^{33} , which may be the same or different, each represent:

a hydrogen atom;

a halogen atom;

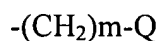
a hydroxyl group;

$-^+NH_3$;

$-^+N(CH_3)_3$;

a C_{1-6} alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom and a hydroxyl group;

a group represented by the formula:



wherein m represents an integer of 0 to 4, and Q represents a formyl group, an amino group, a nitro group, a cyano group, a carboxyl group, a sulfonic acid group, a C_{1-6} alkoxy group which may be substituted with 1 to 4 halogen atoms, a C_{1-6} alkoxy- C_{1-6} alkoxy group, a C_{2-10} acyloxy group, a C_{2-10} acyl group, a C_{2-6} alkoxy-carbonyl group, a C_{1-6} alkylthio group, a C_{1-6} alkylsulfinyl group, a C_{1-6} alkylsulfonyl group, $-NHC(=O)H$, a C_{2-10} acylamino group, a C_{1-6}

alkylsulfonylamino group, a C₁₋₆ alkylamino group, an N,N-di(C₁₋₆ alkyl)amino group, a carbamoyl group, an N-(C₁₋₆ alkyl)aminocarbonyl group, or an N,N-di(C₁₋₆ alkyl)aminocarbonyl group; or

a C₃₋₇ cycloalkyl group, a C₃₋₇ cycloalkyloxy group, an aryl group, a C₇₋₁₀ aralkyl group, an aryloxy group, a C₇₋₁₀ aralkyloxy group, a C₇₋₁₀ aralkylamino group, a heteroaryl group, or a 4- to 6-membered heterocycloalkyl group, provided that each of these groups may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom, a hydroxyl group, a C₁₋₆ alkyl group and a C₁₋₆ alkoxy group, and

R⁴⁰, R⁴¹, R⁴², R⁴³ and R⁴⁴, which may be the same or different, each represent:

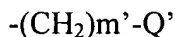
a hydrogen atom;

a halogen atom;

a hydroxyl group;

a C₁₋₆ alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom and a hydroxyl group;

a group represented by the formula:

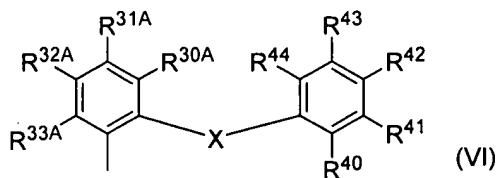


wherein m' represents an integer of 0 to 4, and Q' represents a formyl group, an amino group, a nitro group, a cyano group, a carboxyl group, a sulfonic acid group, a C₁₋₆ alkoxy group which may be substituted with 1 to 4 halogen atoms, a C₁₋₆ alkoxy-C₁₋₆ alkoxy group, a C₂₋₁₀ acyloxy group, a C₂₋₁₀ acyl group, a C₂₋₆ alkoxycarbonyl group, a C₁₋₆ alkylthio group, a C₁₋₆ alkylsulfinyl group, a C₁₋₆ alkylsulfonyl group, -NHC(=O)H, a C₂₋₁₀ acylamino group, a C₁₋₆

alkylsulfonylamino group, a C₁₋₆ alkylamino group, an N,N-di(C₁₋₆ alkyl)amino group, a carbamoyl group, an N-(C₁₋₆ alkyl)aminocarbonyl group, or an N,N-di(C₁₋₆ alkyl)aminocarbonyl group; or

a C₃₋₇ cycloalkyl group, a C₃₋₇ cycloalkyloxy group, an aryl group, a C₇₋₁₀ aralkyl group, an aryloxy group, a C₇₋₁₀ aralkyloxy group, a C₇₋₁₀ aralkylamino group, a heteroaryl group, or a 4- to 6-membered heterocycloalkyl group, provided that each of these groups may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom, a hydroxyl group, a C₁₋₆ alkyl group and a C₁₋₆ alkoxy group.

6. (original): The method according to claim 5, wherein A¹ is represented by the following formula:



wherein

X is as defined in claim 5,

R^{30A}, R^{31A}, R^{32A} and R^{33A}, which may be the same or different, each represent:

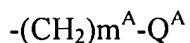
a hydrogen atom;

a halogen atom;

a hydroxyl group;

a C₁₋₆ alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom and a hydroxyl group;

a group represented by the formula:

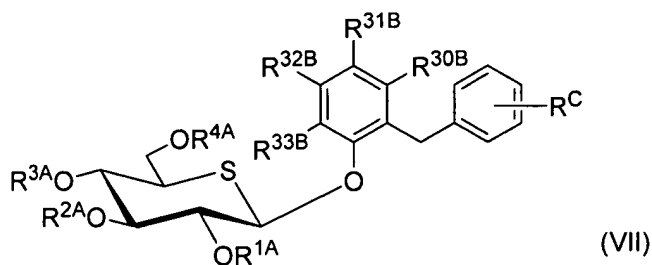


wherein m^A represents an integer of 0 to 4, and Q^A represents a formyl group, a carboxyl group, a C₁₋₆ alkoxy group which may be substituted with 1 to 4 halogen atoms, a C₁₋₆ alkoxy-C₁₋₆ alkoxy group, a C₂₋₁₀ acyloxy group, a C₂₋₁₀ acyl group, a C₂₋₆ alkoxycarbonyl group, a C₁₋₆ alkylsulfonyl group, or a C₂₋₁₀ acylamino group; or

a C₃₋₇ cycloalkyl group, a C₃₋₇ cycloalkyloxy group, an aryl group, a C₇₋₁₀ aralkyl group, an aryloxy group, a C₇₋₁₀ aralkyloxy group, or a C₇₋₁₀ aralkylamino group, provided that each of these groups may be substituted with 1 to 4 substituents selected from the group consisting of a halogen atom, a hydroxyl group, a C₁₋₆ alkyl group and a C₁₋₆ alkoxy group, and

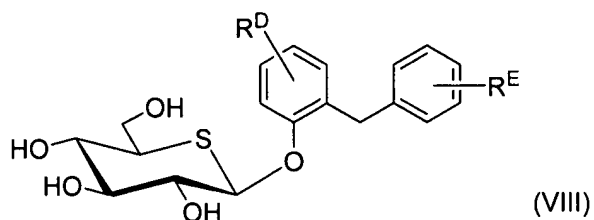
R^{40} , R^{41} , R^{42} , R^{43} and R^{44} are as defined in claim 5.

7. (original): The method according to claim 3, wherein the compound of Formula (V) is a compound represented by the following formula:



wherein R^{30B} , R^{31B} , R^{32B} and R^{33B} , which may be the same or different, each represent a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a C_{1-6} alkoxy group, a C_{1-6} alkoxy- C_{1-6} alkoxy group, a carboxyl group, a C_{2-6} alkoxy carbonyl group, a hydroxyl group or a hydroxy- C_{1-4} alkyl group, R^C represents a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a C_{1-6} alkoxy group, a hydroxy- C_{1-4} alkyl group, a halogen-substituted C_{1-6} alkyl group or a C_{1-6} alkylthio group, R^{4A} represents a hydrogen atom, a C_{2-6} alkoxy carbonyl group or a C_{2-6} alkanoyl group, and R^{1A} to R^{3A} , which may be the same or different, each represent a hydrogen atom, a C_{2-8} alkanoyl group or a benzoyl group.

8. (original): The method according to claim 3, wherein the compound of Formula (V) is a compound represented by the following formula:



wherein R^D represents a hydrogen atom, a halogen atom, a C_{1-6} alkyl group or a hydroxy- C_{1-4} alkyl group, and R^E represents a hydrogen atom, a halogen atom, a C_{1-6} alkyl group, a C_{1-6} alkoxy group or a hydroxy- C_{1-4} alkyl group.

9. (original): The method according to claim 1, wherein Ar is an aryl group substituted with 1 to 4 electron-withdrawing groups.

10. (currently amended): The method according to ~~any one of claims 2 to 4~~, wherein A¹ is an aryl group substituted with 1 to 4 electron-withdrawing groups.

11. (original): The method according to claim 5, wherein at least one of R³⁰, R³¹, R³² and R³³ is an electron-withdrawing group.

12. (original): The method according to claim 6, wherein at least one of R^{30A}, R^{31A}, R^{32A} and R^{33A} is an electron-withdrawing group.

13. (original): The method according to claim 7, wherein at least one of R^{30B}, R^{31B}, R^{32B} and R^{33B} is an electron-withdrawing group.

14. (original): The method according to any one of claims 9 to 13, wherein the electron-withdrawing group is selected from a formyl group, a nitro group, a cyano group, a carboxyl group, a sulfonic acid group, -⁺NH₃, -⁺N(CH₃)₃, -CF₃, -CCl₃, -COCH₃, -CO₂CH₃, -CO₂C₂H₅, -COPh, -SO₂CH₃ and a halogen atom.